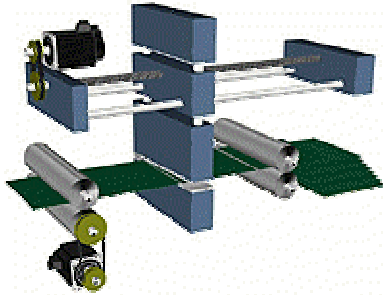




Reciprocating Flying Shear Application Function Block

Software tools to implement reciprocating flying shear applications



This function block makes it easy to implement a full-featured Reciprocating Flying Shear application with a minimum of programming.

Reciprocating Flying Shears are used to cut, emboss, print or apply other processes to a moving web.

The carriage axis, which carries the knife or die, accelerates to match the web speed. The knife or die then cycles to perform the process while the carriage is synchronized to the web. The carriage then decelerates and reverses, moving rapidly back to its starting position ready for the next cycle.

ORMEC's Reciprocating Flying Shear function block provides the following features:

- On-the-fly speed and product length changes.
- Motion cycle verification.
- Registered to a mark or free running operation
- Die clear safety checks.

Machine Setup Data

Your application provides the following information about the machine:

- Maximum carriage travel.
- Maximum carriage speed.
- Maximum acceleration rate.
- Maximum deceleration rate.
- Die output number.

Cycle Setup Data

The shear cycle is defined by the following data provided by your program.

- The maximum line speed.
- The minimum, or when free running - the actual, product length.
- Registered or free running.
- The advance acceleration time.
- The time delay between reaching synchronous speed and when the die should engage the web.
- The length of time the die should remain engaged with the web.
- The time delay from when the die should disengage to when the system resumes checking the die clear input.
- The time delay after resuming checking the die clear input to when the carriage starts to decelerate.
- The advance deceleration time.
- The amount of web material fed between reaching the starting position again and the start of the next cycle.
- The time the die mechanism takes to engage the web after the die output turns on.
- The time the die mechanism takes to clear the web after the die output turns off.

Output Data

The function block provides outputs to tell you:

- When the cycle is armed.
- If the die fails to clear the web.
- If the line speed is too high.
- If the cycle setup does not have a valid solution.
- The minimum product length you can run using the specified setup.

It also provides the data that defines the motion profile and the positions that various events occur during the cycle. This can help in investigating cycle setups that don't have valid solutions.

Operation

Setting the Enable input true activates the function block.

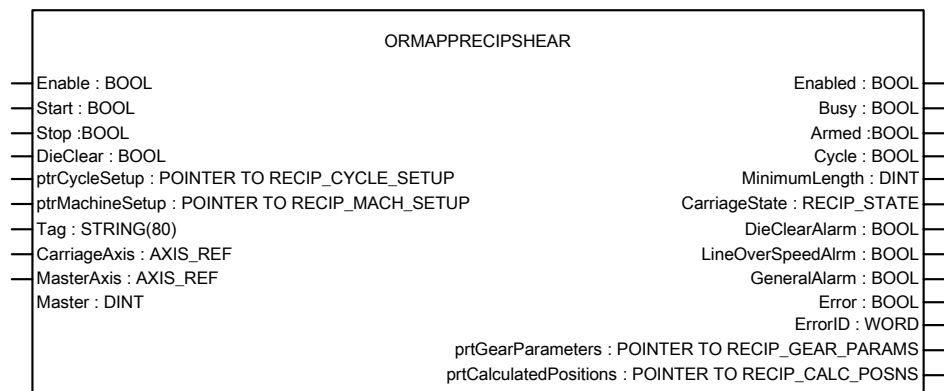
A rising edge on the Start input will then solve the cycle and arm the carriage.

A rising edge on the Stop input will stop the carriage between cycles.

Removing the Enable input will stop the carriage immediately.

A rising edge on the Start input while the carriage is already armed will solve the cycle using any new cycle data values and implement the new cycle seamlessly. Invalid setups are ignored.

The carriage adjusts for changing line speed automatically.



The OrmAppRecipShear function block showing its inputs and outputs